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CONFIDENTIAL

To: . Dr. Robert McCuen Date: May 12, 1988

From: . Elizabeth D. Mooz

Subject: . Second Quarter Organizational Plans for the Alternate Humectant Program (AHP) for 1988: I. Production of a PG/G-free Cigarette and II. Production of a G-free, domestic Marlboro-type cigarette for a POL test

PART I:

Objective

To produce an acceptable cigarette (domestic Marlboro-type) which is PG/G-free by the end of 1988. In order to do this, the following goals must be accomplished.

Produce PG/G-free feedstocks (RL, RCB, ET and ESB)

Produce PG/G-free casings and flavors (Burley spray, Burley top casing, Bright casing and after cut)

Status and Background

Since the second revised plans for the AHP for 1988 were written, (1) the following work has been done.

1. Subjective analyses of eight PG/G-free RL sheets containing various amounts of isosweet (0%, 4%, and 6%) with potassium propylparaben (K-pp) prepared in the R & D Pilot Plant showed that 6% isosweet on RL test cigarettes was the preferred choice when compared to control or 4% isosweet cigarettes (2,3). Analytical results for all the RL sheets showed that there was 0% PG and 0.3% (or below) G. Microbiological tests run on the RL sheets with various concentrations of isosweet and K-pp in place of PG/G did not promote any deleterious microbiological effects versus control sheets (4). Physical property measurements made on test and control RL sheets in a laboratory environment showed that differences in CV and OV determinations were small and not considered significant (5).

2. 15 HHDS of PG/G-free RLTC and RL150B sheet with 6% isosweet and 700 ppm K-pp were made at Park 500 the end of March (6). The K-pp was added to the size prep after running the plant without PG-pp for 12 hours. 65 gal of K-pp were synthesized at R & D (7) and transported to the production plant. 5 HHDS each of two control sheets were also made: one using a normal blend (with class + scrap, 3% PG, 2.5% G, and 700 PG-pp) and a special control (with

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all scrap and no class, plus the other components used in the control).

3. 100% handmade cigarettes were made from several handmade PG/G-free RCB sheets containing isosweet and K-pp, as well as control sheets, which were prepared in the R & D Pilot Plant. Analytical results obtained from all the RCB sheets showed that there was 0% PG and 0.3% (or below) G. Subjective analysis showed that an additional 4% isosweet on RCB test cigarettes was the preferred choice of the Flavor Development panel (8).

4. G-free DIET was prepared at the MC and G-free ESB was made in Louisville (DIET and ESB do not contain any PG). Analytical tests showed that there was 0% PG and 0.2% G for both test feedstocks.

5. 15 HHDS of PG/G-free RCB were made at the BL Plant in mid-April containing scrap (no class) and an additional 4% isosweet. 700 ppm K-pp was added to the slurry in the mixing tank in place of PG-pp prior to the 3 hr cook. 5 HHDS each were also made of a normal control RCB using class tobaccos, 3% PG, 4% G and 700 ppm PG-pp and a special control using scrap (no class) with the other components similar to the control (9,10).

Strategies

Preparation of PG/G-free casings/flavors will be handled by the personnel in the Flavor Development Division.

Using PG/G-free feedstocks and casings/flavors make a PG/G-free, domestic Marlboro in the Semi-Works. A suitable control will also be prepared.

Subjectively evaluate both cigarettes to obtain parity between the test and control.

Tactics and Timetable

The following revised schedule of testing is projected.

5/1 - 6/30	Formulate PG/G-free casings/flavors for a domestic Marlboro (11)
	Microbial analyses of production plant test and control sheets:
3/30 - 4/13	RL (RLTC and RL150B) - zero time samples only
4/18 - 4/29	RCB - 12 week storage study
	Analytical confirmation of target levels in the production plant sheets:
3/30 - 4/15	RL (RLTC and RL150B)
4/18 - 5/2	RCB

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5/2 - 6/10	Zero time survivability of the production plant sheets (RL and RCB) in the Semi-Works (survivabilities on stored materials will be done at an appropriate interval following the zero time test)
5/9 - 6/10	Make small batch cigarettes (100%) in Semi-Works from the production plant sheets
6/30 - 8/12	Zero time survivability of test and control DIET and ESB feedstocks in the Semi-Works (survivabilities on stored materials will be done at an appropriate interval following the zero time test)
6/13 - 7/8	Toxicological evaluation of small batch, 100% cigarettes
6/13 - 7/8	Subjective analysis of small batch, 100% cigarettes
7/1 - 9/2	Using the PG/G-free feedstocks and flavors/casings make blended cigarettes (domestic Marlboro) in the Semi-Works (small scale). A suitable control cigarette will also be prepared (11). Maker survivability of test and control blends will be done.
9/5 - 9/30	Physical and chemical analyses of blended, test and control cigarettes will be done to confirm target levels (11). Subjective analyses of test and control cigarettes by Flavor Development personnel (11).
10/3 - 10/28	Assess data and make recommendations

Resource Allocation

The following resources are necessary to complete the above work. The numbers in parentheses are the estimated person-years necessary to complete the 1988 objective, based on 1785 hours/person-year.

Production Plant	Person-years
Park 500:	Production of test and control RL (0.13)
BL Plant:	Production of test and control BL (0.05)
Louisville/MC:	Production of test and control ESB and DIET (.04)

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Research & Development Person-years

Project 1307; 1806	Pilot Plant support and production plant coordination (0.04)
Project 1902:	Microbiology (0.06)
Project 1904:	Alternate Humectant Program coordinator (0.3)
Project 2305:	Subjective evaluation of all cigarettes by one or more qualified people (0.05); production of PG/G-free flavors and casings (0.05)
Project 1904; 2525	Production of K-pp (0.02)
Project 6906:	Toxicology (0.11)
Analytical Res. Division:	Analyses of all test and control sheets/cigarettes to confirm target levels (0.84)
Semi-Works:	Production of all cigarettes (0.03) and survivability determinations (0.08)

It is estimated from previous experiences with this Program, that the potentially "difficult areas" (areas that are involved with many other high priority programs) are the Analytical Research Division, the Flavor Development Division (Project 2305) and the Semi-Works. Of these three, getting test cigarettes through the Flavor Development area presents the greatest challenge.

Impact on Other Areas

Within R & D - Using the timetable and resource section it is obvious that the Flavor Development Division personnel are the key to the success of the Program throughout 1988.

Outside R & D - According to the above plans, the facilities at Park 500 and the BL Plant were used in March and April. This "need" was manageable and approximated 1 line for 1 shift/per sample. G-free DIET was prepared at the MC and G-free ESB was prepared in Louisville. These arrangements were made by personnel in the Flavor Development Division.

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PART II:

Objective

To produce an acceptable G-free cigarette (domestic Marlboro-type) for a POL test. In order to do this, the following goals must be accomplished.

Produce or use existing G-free feedstocks (RL, RCB, ET and ESB)

Produce G-free casings and flavors (Burley spray, Burley top casing, Bright casing and after cut)

Status and Background

Since the second revised plans for the AHP for 1988 were written, it was decided by management to send out a domestic POL to test the acceptability of a G-free, domestic Marlboro versus a control Marlboro. To meet this objective, the following items were done:

G-free RLTC and RL150B sheets made at Park 500 in 9/87 (with scrap, 4.5% PG, 0% G, and 700 ppm PG-pp) were remade into 100% cigarettes for subjective reevaluation. Analytical results of the test RL sheets showed that there was 4% PG and 0.2% G. Since the test RL cigarettes gave similar subjective responses to those of the controls (12), it was decided to reuse these RL sheets in the G-free POL test.

G-free RCB sheets (with scrap, 2% or 4% PG, 0% G, and 700 ppm PG-pp) and control sheets were made 2/88 at the BL Plant. Cigarettes (100%) were made for subjective analysis. Subjective results from the new G-free RCB cigarettes showed that 2% PG was the preferred choice when compared to control or 4% PG cigarettes (13). Analytical results for the 2% test sheet showed that the level of PG was about 2% and the level of G was about 0.3%.

G-free DIET was prepared at the MC and G-free ESB was prepared in Louisville. Analytical results showed that there was 0% PG and 0.2% G for both feedstocks.

G-free casings and flavors were prepared by personnel in the Flavor Development Division.

In April, G-free components were blended in the Semi-Works to make a domestic, Marlboro-type cigarette. A suitable Marlboro control was also prepared. Analytical tests showed that the FTC Tar was 16.2 mg/cigt. for the test cigarette and 16.7 mg/cigt. for the control cigarette. The level of PG was about 3% for the G-free cigarette, while the value of G was 0.3%.

At least three different subjective analyses of the control and G-free POL cigarettes were run. As a result of the subjective findings of the Richmond Smoking Panel, it was decided to cancel the POL test scheduled to be sent out in April due to unacceptable taste of both the control and test cigarettes.

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Tactics and Timetable

The following schedule is projected for the POL test.

5/9 - 5/20	Examine data and make recommendations for further work. Additional work may be done by personnel in the Flavor Development Division to adjust one or more of the casings/flavors.
5/23 - 6/3	Remake G-free POL cigarette and control with altered flavors/casings.
6/6 - 6/17	Analytical analysis and subjective analysis of remade, G-free cigarette and control.
6/20 - 6/24	Examine data and, if acceptable, mail out POL
8/12	Close out POL
8/15 - 9/2	PED personnel will analyze the POL results and a report will be written.

Resource Allocation

The following resources are necessary to complete the above work. The numbers in parentheses are the estimated person-years necessary to complete the 1988 objective, based on 1785 hours/person-year.

Production Plants:	Person-years:
BL Plant:	Production of test and control BL (0.05)
Louisville/MC:	Production of test and control ESB and DIET (.04)

Research & Development:	Person-years:
Project 1307	Pilot Plant support and production plant coordination (0.02)
Project 1904:	Alternate Humectant Program coordinator (0.02)
Project 2305:	Subjective evaluation of cigarettes by one or more qualified people (0.02)
Analytical Res. Division	Analyses of test and control sheets/cigarettes to confirm target levels (0.02)
Semi-Works	Production of cigarettes (0.02)

It is estimated from previous experiences with this Program, that the potentially "difficult areas" (areas that are involved with many other high priority programs) are the Analytical Research Division, the Flavor

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Development Division (Project 2305) and the Semi-Works. Of these three, getting test cigarettes through the Flavor Development area presents the greatest challenge.

Impact on Other Areas

Within R & D - Using the timetable and resource section it is obvious that the Flavor Development Division personnel are the key to the success of the Program throughout 1988.

Outside R & D - According to the above plans, the facilities at the BL Plant were used in February. This "need" was manageable and approximated 1 line for 1 shift/per sample. G-free DIET was prepared at the MC and G-free ESB was prepared in Louisville. These arrangements were made by personnel in the Flavor Development Division.

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